ARMY RDT&E BUDGET ITEM JUSTIFICATION (R2 Exhibit)

February 2006

BUDGET ACTIVITY	PE NUMBER AND TITLE	PROJECT
7 - Operational system development	**0203752A - Aircraft Engine Component Improvement Program**	**106**

COST (In Thousands)	FY 2005 Estimate	FY 2006 Estimate	FY 2007 Estimate	FY 2008 Estimate	FY 2009 Estimate	FY 2010 Estimate	FY 2011 Estimate	Cost to Complete	Total Cost
106 A/C COMPON IMPROV PROG	7117	2036	860	479	331	800	722	0	24389

A. Mission Description and Budget Item Justification: Aircraft Engine Component Improvement Program (CIP) develops, tests, and qualifies improvements to aircraft engine components to correct service-revealed deficiencies, improve flight safety, enhance readiness and reduce operating and support (O&S) costs. In addition, CIP provides the test vehicles for the testing and qualification efforts required as a part of the Army's Flight Safety Parts program. CIP is included in the RDTE budget vice procurement appropriations in accordance with congressional direction.

Accomplishments/Planned Program	FY 2005	FY 2006	FY 2007
T700 Engine: Continue addressing flight safety and readiness problems that arise in the field by providing timely engineering support. Continue the development of the T700-GE-701D, an essential upgrade required for the UH-60M aircraft. Continue the engineering support of fielded engines to enhance warfighting capability and improve durability and reliability while reducing cost of ownership. 2005: Performed life analysis and development work on the 701D engine to reduce engine O&S costs, increase flight safety, and improve engine on-wing life. Continued development of the Enhanced Digital Engine Control Unit and supported flight testing on the UH-60L to reduce O&S costs and improve safety. Began development of a Full Authority Digital Engine Control for the UH-60M to improve readiness and reduce O&S costs. 2006: Initiate development of Apache controls for the 701D to improve readiness and flight safety and reduce O&S costs. Complete all open -701D qualification reports. Contribute to the development and qualification of an improved durability compressor to increase readiness and reduce O&S costs. Begin development of an improved durability Inlet Particle Separator impeller to improve engine on-wing life, resulting in improved readiness and reduced O&S costs. 2007: Funding reprogrammed to PE 273744 beginning FY07. All work efforts will cease due to the removal of funding, resulting in reduced safety and readiness, and increased O&S costs for H-60 and H-64 helicopters.	1039	1233	0
T55 Engine: Continue applying engineering effort to unanticipated flight safety problems revealed in the field & provide timely support. Continue the engineering support of fielded engines to enhance war-fighting capability, improve durability & reliability while reducing cost of ownership. 2005: Continued with the design & qualification of an improved bleed system to reduce O&S costs. Completed the Safety Enhanced Plumbing program which improves engine safety. Continued efforts on the N2 Speed Sensor System to reduce amount of hardware O&S. Continued with the design effort & development of the T55-GA-714B engine upgrade program, the program which will increase temperature margin & reduce specific fuel consumption (SFC) and O&S costs. (Note: In July 2005 the T55-G-714B engine upgrade program was deferred by the Cargo Helicopters Program Manager (PM), Program Executive Office (PEO) Aviation.) Started efforts to complete the qualification of an improved Engine Control Unit (ECU) for CH-47 D/F aircraft. The ECU is a member of the "Universal Control" family of engine controls, previously funded by Congressional and Cargo Helicopter PM funds and now a part of CIP. 2006: Complete the qualification effort for the Improved Bleed Systems and Improved N2 Speed Sensor and submit Engineering Change Proposal (ECP) for incorporation. Continue with the qualification effort for the ECU program. Initiate Compressor Erosion Resistant Coating program to increase engine time on wing. Initiate a program to activate the ECU MIL-STD-1553 data bus for CH-47F aircraft. Initiate an Aviation Diagnostic and Engine Prognostic Technology (ADEPT) program to include updating engine lifing algorithms. 2007: Efforts to be performed to complete previously awarded tasks: Complete qualification of the ECU and submit the ECP for incorporation. Complete the Compressor Erosion Resistant Coating ECU 1553 Activation, and the ADEPT programs.	750	256	400
GTCP36 Auxiliary Power Unit (APU): Continue to provide timely responses to technical problems arising in the field during operational	143	150	100

use. Review operational and repair reports, perform engineering analysis of failed engines and equipment. Perform investigation and testing as required to isolate/verify reported field problems and service revealed deficiencies (SRDs). 2005: Conducted engineering analysis of SRDs, life analysis of critical rotating parts and continue life analysis of critical rotating components. Conduct engineering analysis of service revealed deficiencies. 2006/2007: Complete life analysis and establish and/or verify life limits for turbine and compressor wheels to improve flight safety. Develop new repairs and extend wear limits, new repair tools and techniques to reduce O&S costs. Conduct engineering analysis of service revealed deficiencies.			
T62 APU: Continue to provide timely responses to technical problems arising in the field during operational use. Review operational and repair reports, perform engineering analysis of failed engines and equipment. Perform investigation and testing as required to isolate/verify reported field problems and service revealed deficiencies (SRDs). 2005: Conducted engineering analysis of service revealed deficiencies as well as continued life analysis of critical rotating components. Completed material testing in support of life analysis. 2006/2007: Complete life analysis and establish and/or verify life limits for turbine and compressor wheels to improve flight safety. Conduct engineering analysis of service revealed deficiencies. Evaluate current combustor fuel manifold failures from field and initiate redesign effort to increase reliability and maintainability.	150	125	150
IN HOUSE: In-house support for the CIP engineers. Contracting support for CIP contracts.	244	272	210
Continued development of Universal Full Authority Digital Engine Control (FADEC).	4791	0	0
Total	7117	2036	860

B. Program Change Summary	FY 2005	FY 2006	FY 2007
Previous President's Budget (FY 2006)	7121	2066	6702
Current BES/President's Budget (FY 2007)	7117	2036	860
Total Adjustments	-4	-30	-5842
Congressional Program Reductions		-9	
Congressional Rescissions		-21	
Congressional Increases			
Reprogrammings	-4		
SBIR/STTR Transfer			
Adjustments to Budget Years			-5842

FY07 - Funds transferred to higher priority Army programs.

D. Acquisition Strategy Improved designs will be implemented via Engineering Change Proposal (ECP) and follow-on procurement or modification to a production contract to introduce the improved hardware.

ARMY RDT&E COST ANALYSIS (R3)

February 2006

BUDGET ACTIVITY
7 - Operational system development

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I. Product Development	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
T700 Engine	SS/CPFF	GE-Air, Lynn, MA	56934	1038	1-2Q	1233	1-2Q	0	1-2Q	Continue	0	Continue
T55 Engine	SS/CPFF	Honeywell, Phoenix, AZ	26628	750	1-3Q	256	1-2Q	400	1-2Q	Continue	0	Continue
APU's	MIPR	Air Force, Kelly AFB, TX	13557	0		0		0		0	13557	13557
EDECU	SS/CPFF	GE-Air, Lynn, MA	774	0		0		0		0	774	0
FADEC/FDU	MIPR	CECOM, Ft. Monmouth, NJ	8107	4788		0		0		0	0	5716
APU's	MIPR	Air Force, Hill AFB, UT	1263	300	3Q	275	3Q	250	3Q	Continue	0	Continue
LOLA	MIPR	CECOM, Ft. Monmouth, NJ	938	0		0		0		0	938	0
Subtotal:			108201	6876		1764		650		Continue	15269	Continue

II. Support Costs	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
Contract Engineering	SS/CPFF	Westar, St. Louis, MO	10	0		0		0		0	10	10
Contract Engineering	SS/CPFF	Camber, Huntsville, AL	199	0		0		0		0	199	199
Contract Engineering	SS/CPFF	AMS, Huntsville, AL	107	0		0		0		0	107	107
Contract Engineering	SS/CPFF	Westar, Albuquerque, NM	30	0		0		0		0	30	0
Subtotal:			346	0		0		0		0	346	316

III. Test And Evaluation	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract

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Redstone Avn Prop Test Res (RAPTR) Facility Data Reduction Prog	MIPR	Redstone Technical Test Center, RSA, AL	946	0		0		0		0	946	Continue
Subtotal:			946	0		0		0		0	946	Continue

Remarks: Not Applicable

IV. Management Services	Contract Method & Type	Performing Activity & Location	Total PYs Cost	FY 2005 Cost	FY 2005 Award Date	FY 2006 Cost	FY 2006 Award Date	FY 2007 Cost	FY 2007 Award Date	Cost To Complete	Total Cost	Target Value of Contract
In-house Engineering		ATCOM, St. Louis, MO	10342	0		0		0		0	10342	10342
In-house Engineering	NA	AMRDEC Redstone Arsenal, AL	1182	241	1-4Q	272	1-4Q	210	1-4Q	Continue	0	Continue
DA Withhold			118	0		0		0		0	118	0
Prior Year Closed Account Funding			5	0		0		0		0	5	0
SBIR/STTR			147	0		0		0		0	147	0
Subtotal:			11794	241		272		210		Continue	10612	Continue
Project Total Cost:			**121287**	**7117**		**2036**		**860**		**Continue**	**27173**	**Continue**